The Power of Clarity

Owner's Manual and Setup Procedures

Radia Series.....R-800 / R-400C / R-88Sub / BGA-2500

Introduction

Congratulations and thank you for selecting state of the art Radia Series In-Wall loudspeakers from BG Corp. We have assembled your loudspeakers with the greatest care and using the finest materials available. This craftsmanship, combined with our patented planar ribbon technology, delivers sound unmatched by any conventional loudspeaker.

The Radia Series, BG's finest In-Wall loudspeakers, are ideal for either critical music listening or high performance home theater applications. The line is comprised of models R-800, R-400C, R-88Sub. The BGA-2500 amplifier is used to drive the R-88Sub and active woofer section of R-800.

NOTE: This installation manual is primarily written for the professional custom installer who will have the necessary experience for a perfect installation and be familiar with local electrical and construction codes.

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Read and Follow Instructions – Please read this entire manual ***before*** unpacking and installing the Radia Series In-Wall loudspeakers. For optimum performance and years of trouble-free enjoyment, all operating and care instructions should be followed.

Retain – DO NOT discard any factory packing material. The packing and shipping materials may be required in the unlikely event your loudspeakers need to be moved or shipped to our service center at BG.

Cleaning – Use a wax-free cleaning substance only (i.e. Pledge™) with a soft, dry polishing cloth not a paper-based chamois. DO NOT spray any cleaning solutions directly on the grill as it can clog its perforations.

Liquid – DO NOT place BG loudspeakers near an open source of liquid that may spill on the loudspeaker surfaces.

Heat – DO NOT place BG loudspeakers near a direct heat source.

Unpacking Your BG Loudspeakers and Amplifier

1. Due to its size and weight, the R-800 is shipped in a wooden crate. Other models are shipped in cardboard boxes. Place the shipping box down on the floor, ensuring that you have adequate space to set the loudspeaker down after removing it from the box. Caution: If your floor is not carpeted, lay a blanket or other suitable soft fabric on the floor to prevent possible damage to the loudspeakers.
2. Rotate the box if required, so that the white product label affixed at the factory is on top and facing up.
3. Pull the top flaps (cardboard box) or the top cover (wooden crate) of the shipping box up, taking care not to cut yourself on the staples used to close the box. Open the other cardboard end flaps to expose the loudspeaker still cradled in its protective foam and inside a protective plastic bag. Remove the foam pieces over the top of the loudspeaker.
4. The R-800 has two plywood panels attached with screws on the sides that secure the loudspeakers into the box. Use a screwdriver to remove those panels before taking the speakers out.
5. Remove the loudspeaker by lifting it straight up and out of the box. Due to their weight, we recommend that two people work together to remove the R-800 from the crate.
6. Cut the taped seams of the amplifier box with a utility knife. Open the box flaps and carefully remove amplifier from the box.

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General Information

General considerations

The R-800, R-400C and R-88Sub are high output, full range systems that are designed to be installed in the wall. If there is a room adjacent to the wall where the system is installed, low frequency bass sound will be heard there due to natural sound transmission. The Installer should take the utmost care with the wall preparation to reduce natural vibrations. See details in the Installation section.

Proper Hookup: All Radia in-wall speakers have binding post connections clearly marked "+" and " –".

Connect Red speaker terminal post to positive (+) amplifier post.
Connect Black speaker terminal post to negative (-) amplifier post.

The R-800 must be bi-amplified by running separate dedicated loudspeaker wires from BGA-2500 amplifier to its woofer section and from your power amplifier to ribbon line array section of this speaker system.

Break-In Times: Typically a BG loudspeaker requires not less than 48 hours of operation at moderate sound level before reaching its optimum sound quality. This improvement may be subtle yet noticeable for a trained listener. **Note:** Do not play your loudspeakers excessively loud to try to accelerate this process.

Amplifier: BG loudspeakers are extremely accurate and deliver a high degree of detail and resolution at low distortion. Use an SPL meter to verify playback levels. A good 100-250 watt per channel amplifier or receiver is needed to deliver adequate power for a typical room size. Your authorized BG Dealer can recommend an amplifier and other components and accessories best suited to your needs.

Construction Principles and Preparation for Installation of Radia Series Loudspeakers

1. General recommended layout of the front speakers is shown on Fig.1. R-800 installation height should be chosen so that the height of the R-800 center point **H** is equal or several inches higher than the ear level at listening position. In most cases this would be about 40" (1m). Distance between left and right speakers **D** should be equal or close to the distance from listening position to center channel speaker/screen.

2. In most cases, the center channel speaker R-400C should be installed right under the screen. Make sure that the top tweeter is oriented directly above or below the screen (see indicator at the back of the speaker).

3. Allow for a minimum of 2.5 cubic feet for the rear cavity behind the loudspeakers for optimum performance. A good rule of thumb is to use an enclosure/stud cavity no smaller than a standard 2 x 4 stud-bay with 16" on-centers and 8 feet tall. If you plan installing speakers in dedicated cabinets, prepare it with at least this enclosure size in mind. Enclosures of greater depth, such as based on 2" x 6" studs, can also be used as long as it is filled with fiberglass.

4. Sealing holes and joints whenever possible will also enhance low frequency performance.

5. Utilizing an open-cell 1-mm thick compressible gasket strip (included) under the lip of the mounting flange is necessary to avoid air leaks and resulting noise.

6. Always fill the entire enclosure with slightly compressed fibrous material as would be found normally in a loudspeaker enclosure (Fiberglass insulation, Dacron, Miraflex, etc.).

7. In order to reduce wall vibration for the installation, a shear surface is recommended beneath the drywall. R-Series loudspeakers are relatively heavy and are capable of producing high sound pressure levels. A 1/4" or 3/8" plywood, MDF (or particleboard) sub surface would act as that shear-wall with a loudspeaker cutout will also enhance the system's performance. Use flexible adhesive between two panels to provide an additional layer dampening for the wall.

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8. Use construction adhesive and tightly spaced screws to secure panels with loudspeaker cutouts to studs.

9. We recommend using our optional new construction metal brackets, especially when loudspeakers are installed in regular drywall panels without additional panel reinforcement, as stated in paragraph 7. Properly bonded with construction adhesive to the wall, the brackets not only provide a better seal, but also reinforce the whole assembly and thereby reduce vibration.

10. For new construction, we highly recommend bracing adjacent stud cavities to the left and to the right of the loudspeaker with additional diagonally positioned studs. Use construction adhesive and screws to couple studs to the wall. Stuff adjacent cavities heavily with dense green fiberglass. It has higher transmission loss characteristics than pink fiberglass.

11. If maximum sound isolation is required, we recommend building dedicated back boxes and suspending them inside the stud cavity or installing loudspeakers in 5” deep on-wall cabinets. Refer to specification sheets for cutout sizes and installed depth for cabinet layout. We recommend minimum enclosure volume as indicated above.

Installation

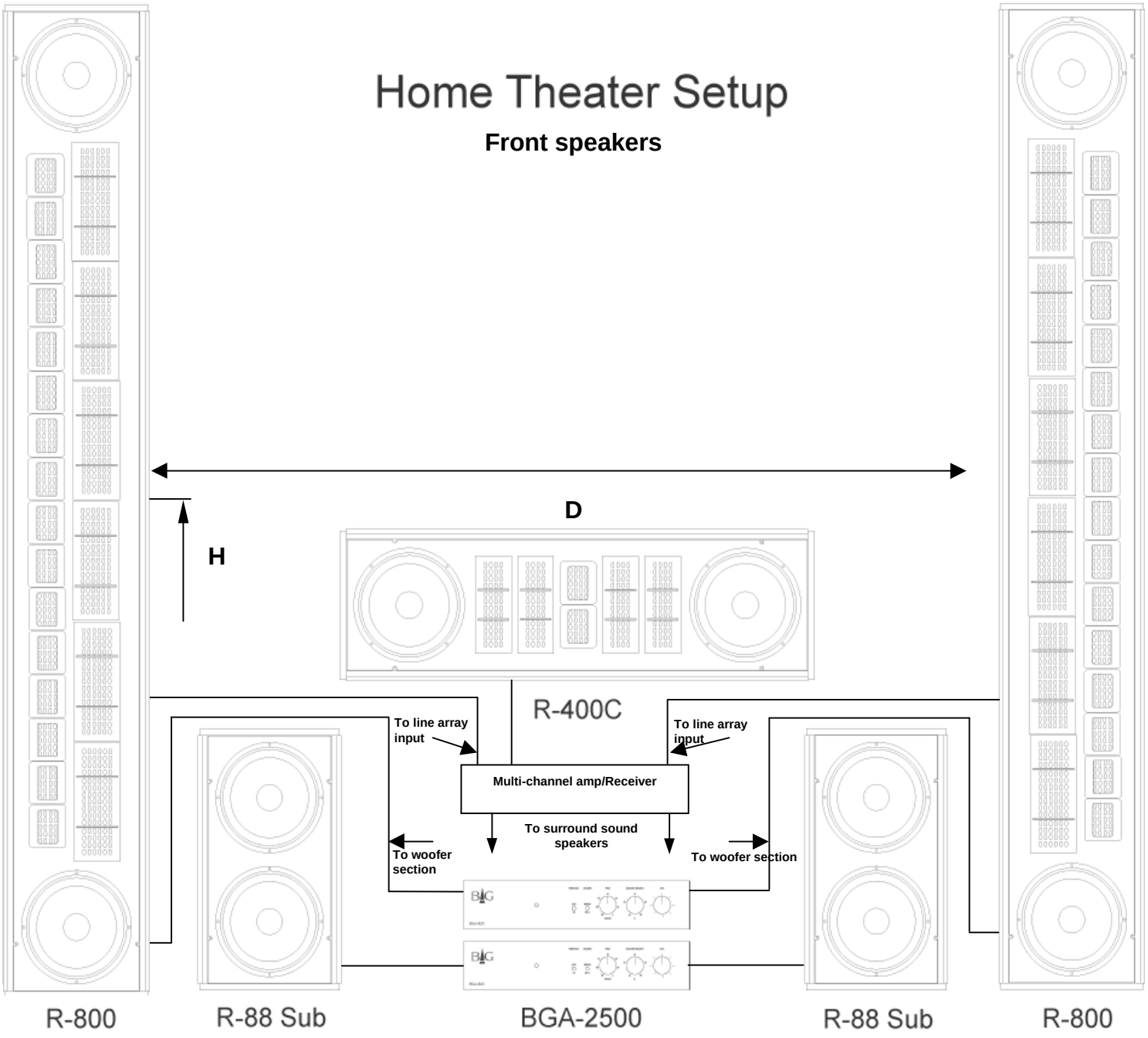

FIG.1

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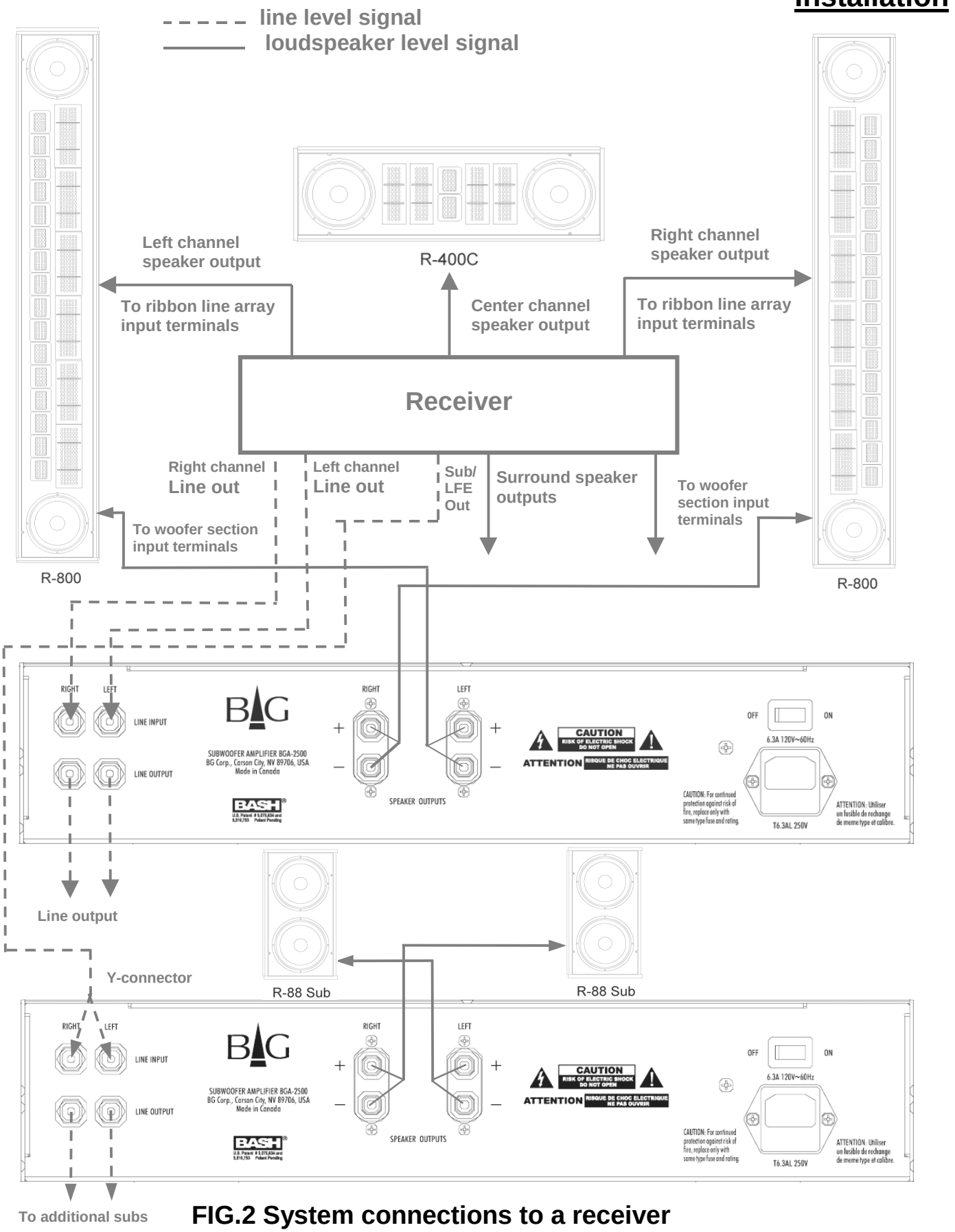

FIG.2 System connections to a receiver

Installation

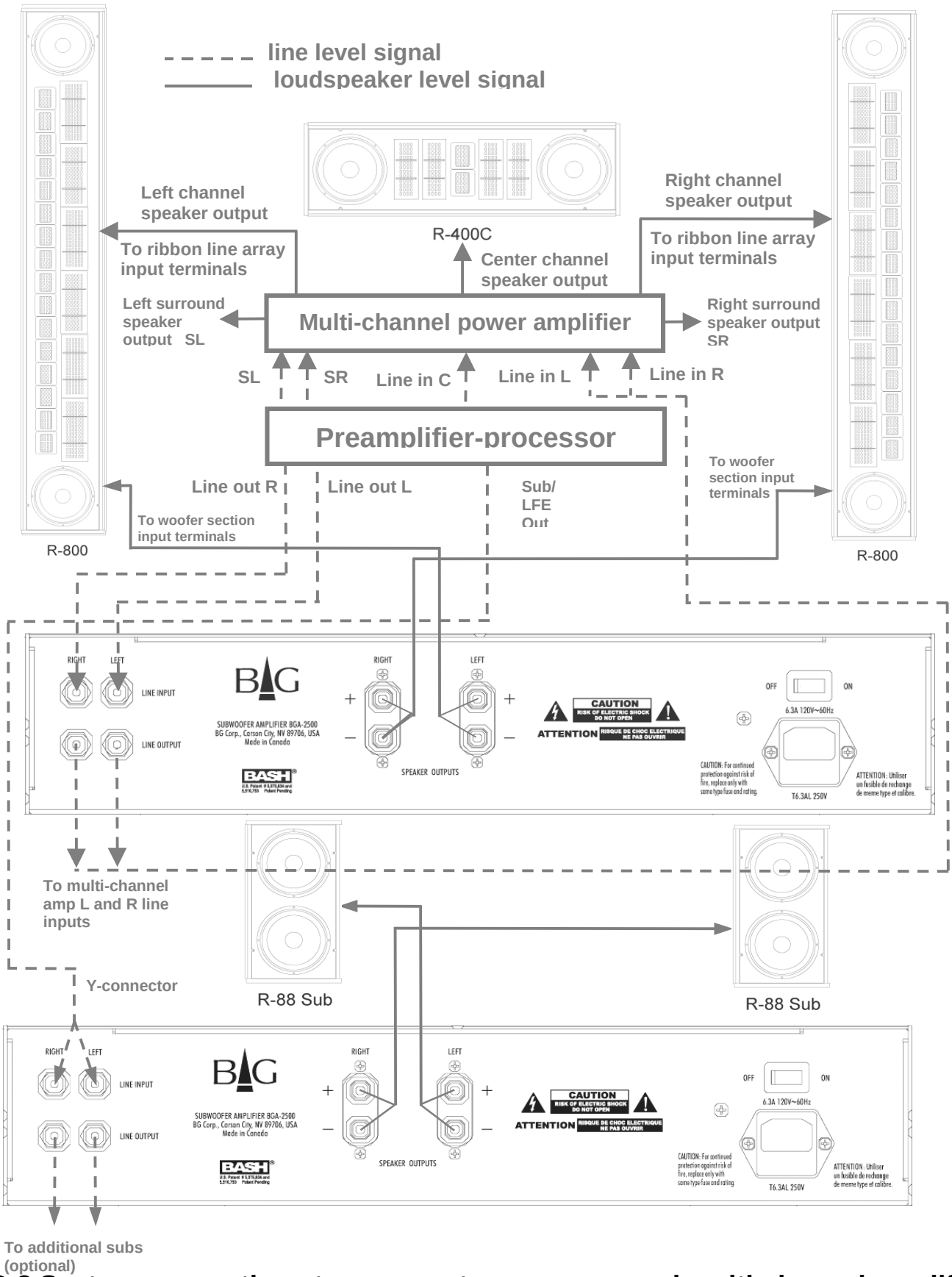

FIG.3 System connections to a separate processor and multi-channel amplifier

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Connecting Electronic Components and Hookup

1. If your home theater system has an integrated receiver, follow FIG.2 for component connections.

2. If you use a separate preamplifier-processor and multi-channel power amplifier, follow FIG.3 for suggested connections.

3. Use high quality 14 AWG loudspeaker wire for all loudspeaker connections. Consult with your installer regarding what wire and cables will be best for your system.

4. R-800 connections:

    - Connect woofers to BGA-2500 speaker outputs using loudspeaker cable and two quick disconnect connectors (supplied) by stripping wires and crimping them. The connectors are attached to the bottom woofer (The tweeter array should be located on the outer side of the system).

    - Connect ribbon planar line array to your receiver/amplifier using two #10-24 hook connectors attached to PCB input terminals with #10 screws. These Phillips Lug screws will be found on the back PCB (Printed Circuit board) of the loudspeaker.

    - Crimp the wire and tighten the connectors with the screws.
      #10 Phillips marked (+) on PCB to positive amplifier post
      #10 Phillips marked (-) on PCB to negative amplifier post

5. R-400C connection:

    - Same as ribbon planar line array of R-800 (see above).

6. R-88Sub connection:

    - Same as R-800 woofer section (see above).

Installation

Loudspeaker Installation

1. Cut a hole of the proper size for the loudspeaker using the supplied template.

2. Fill the loudspeaker cavity loosely with standard pink fiberglass.

3. Remove the loudspeaker from the plastic packaging.

4. Remove the black outer rubber covers on the sides of the front panel to reveal the 1/8" Allen-Key screws to the dog-toggles.

5. Connect the loudspeaker cable and connectors to the loudspeaker. If new construction brackets were installed during the construction phase of the project pull the cable out and connect the crimp on connectors. If not, run the proper cable and then connect the loudspeaker wires via the crimp-on connectors.

6. Insert the loudspeaker in the cavity.

7. Using the supplied 1/8" Allen-Key bit in a medium clutched screw gun, engage the dog-toggles and tighten.

8. Insert the bottom and top edges of the grille into the end caps - the grille will buckle in the middle. Gradually insert the side edges of the grille into the grille slots located on the side edges of the speaker. Insert the grille simultaneously from the top and bottom to the middle of the grille and speaker.

9. Test the loudspeaker.

Installation notes: R-88 in-wall subwoofers should be installed in stud cavities adjacent to the R-800, preferably symmetrical to the listening position. The preferable position is closer to the corners of the room on the outer sides of the R800s. Placing the R-88Subs closer to the corners will result in fuller bass. FIG.2 and FIG.3 shows R-88 Subs inside of R-800s for space saving and better scaling. However if the room's size does not permit the R-88Sub to be placed in the corner while keeping the R-800's spacing at minimum of 8 feet (see FIG.1 distance D), we recommend positioning the subwoofers as shown on FIG.2 and FIG.3. Proper distance between the R-800s should be the priority. The R-400C center channel speaker has a preferred top side: refer to the rear panel.

Processor and Amplifier Settings

Today's electronic processors and AV receivers have built-in crossover points for small and large loudspeaker settings. We recommend using the large setting with the R-800 left and right loudspeakers as this loudspeaker is a full range design. At this setting the R-800 along with two R-88Subs is capable of delivering very high output in practically any residential room. When using more than two subwoofers and when maximum possible SPL is required or when the room is very large, you can set R800s as small. This will relieve the R-800's woofers and allow higher undistorted output providing there is sufficient subwoofer support in the system. We recommend setting the small setting for R-400C center channel loudspeaker for optimum performance.

Before using your processor's auto-level set up routine (level calibration) and automatic room EQ (where this option is available) we recommend performing a level-balancing procedure for the R-800 and R-88Sub controls. Setting the BGA-2500 Level knob at the 1 o'clock setting will provide balanced frequency response for the R-800 loudspeaker at 10-ft. (3 meters). In most cases your setting should not vary too much from this recommended level. However, different receivers and amplifiers that will power the R-800 ribbon planar array usually have different amplification factor or gain and room acoustic parameters will affect the sound as well. Therefore it is important to set BGA-2500 controls properly to make sure that the R-800's woofers deliver the same output as the planar ribbon array at the listening position and overall sound is spectrally balanced. Connect all speakers and electronics in the system as indicated on either of the above diagrams. Set BGA-2500 controls as recommended below.

R-800:

1. Set BGA-2500 Phase control knob at 0° (**Note**: When used together with the R-800, the phase knob on the BGA-2500 amplifier should always be set at 0°).

2. Set Crossover switch at 250Hz.

3. Set Level potentiometer knob at about the 1 o'clock position.

4. Sit in the primary listening location, preferably at equal distance between two loudspeakers and not closer than 10 feet (3 m) to the screen. Turn on your test or favorite stereo recording (preferably with vocal content) and listen to it through one speaker (left or right). Keep adjusting Level knob to the point when the sound is optimally balanced. To confirm the results, listen to several different recordings and through both loudspeakers in stereo.

Processor and Amplifier Settings cont.

5. You may use a pink noise test signal and RTA analyzer for this procedure (one channel), but ultimately your listening preferences should be of higher priority.

R-88Sub:

1. If your R-88Sub is located less than 5 feet (1.5 m) from the closest R-800, set its BGA-2500's Phase control knob at 0°. If this distance is further than 5 feet (1.5 m), set the Phase control knob at 90°.

2. Set Crossover switch to Variable and set Crossover Frequency control knob at 80 Hz.

3. Set Level potentiometer at about 75% of max level or around the 2 o'clock position.

4. Sit in the primary listening location as described above for R-800.

Now you are ready to run level calibration sequence that should be provided by your processor or receiver's internal generator. Refer to your system's electronics manual for this. Run the level setting sequence. Your R-800 left and right levels should be at 0 dB. Normally your R-400C center channel level setting should be at 0 dB or slightly higher. The subwoofer level setting would depend on the number of subs that you use, their location, room parameters and your location in the room. The levels for surround channels would depend on speakers that you use, and their distance to the listening position. After the level setting is completed we recommend listening to your test/demo surround sound material to verify these settings. You may want to fine tune the levels based on your actual listening experience. You may also use a microphone and RTA analyzer for this procedure to accurately verify levels.

If your subwoofers are further than 5 feet (1.5m) apart from the main R-800 speakers, we recommend using a signal with sustained bass levels or 50-80Hz sine signal and adjust the Phase Control knob on R-88Sub's amplifier so that the bass level is maximum at the listening position. Then run level calibration procedure again, since you may want to reduce subwoofer's level after phase setting has been optimized.

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WARRANTY: All BG loudspeaker systems are warranted to the original purchaser for five years against defects in materials and manufacture when used in properly designed systems. Warranty is two years for the Z-Sub and Radia 210i subwoofer.

Please record your loudspeaker's information below for future reference.

MODEL: _____

SERIAL NUMBER: _____

PURCHASE DATE: _____

AUTHORIZED DEALER: _____

As part of our policy of continual product improvement, BG reserves the right to change or discontinue any specifications or parts associated with any of its products without advanced notice.

Thank you again for choosing BG loudspeakers!

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